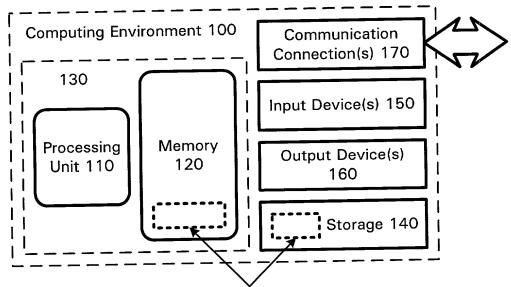
Portland, Oregon 97204 Telephone: 503/226-7391 Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US

Mailed: December 14, 2001

## Figure 1



Software 180 Implementing Audio Encoder with Joint Rate/Quality Control

## Figure 7a

### 0.8 $0.95 < B_F$ $0.9 < B_F \le 0.95$ 8.0 $0.75 \quad 0.85 < B_F \le 0.9$ $0.8 < B_F \le 0.85$ 0.7 $0.65 \quad 0.75 < B_F \le 0.8$ $0.6 \quad 0.7 < B_F \le 0.75$ $0.55 \quad 0.65 < B_F \le 0.7$ $f_3(B_F, B_{FSP}) = \begin{cases} 0.45 & 0.6 < B_F \le 0.65 \end{cases}$ $0.45 \quad 0.55 < B_F \le 0.6$ $0.45 \quad 0.5 < B_F \le 0.55$ 0.5 $0.4 < B_F \le 0.5$ $0.3 < B_F \le 0.4$ 0.5 $0.4 \quad 0.2 < B_F \le 0.3$ 0.4 $0.1 < B_F \le 0.2$ $B_F \le 0.1$ 0.4

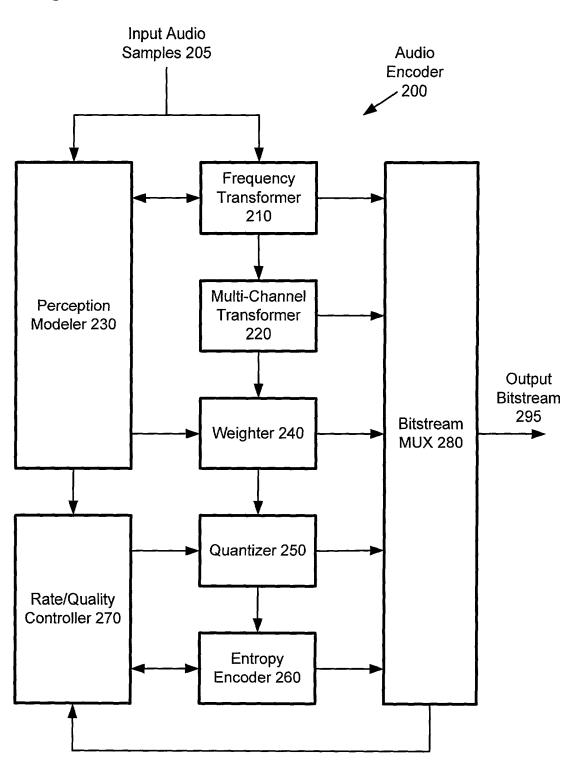
## Figure 7b

$$f_3(B_F, B_{FSP}) = \begin{cases} 0.8 & 0.95 < B_F \\ 0.8 & 0.9 < B_F \le 0.95 \\ 0.75 & 0.85 < B_F \le 0.9 \\ 0.7 & 0.8 < B_F \le 0.85 \\ 0.65 & 0.75 < B_F \le 0.8 \\ 0.65 & 0.75 < B_F \le 0.75 \\ 0.65 & 0.65 < B_F \le 0.75 \\ 0.65 & 0.65 < B_F \le 0.65 \\ 0.65 & 0.55 < B_F \le 0.65 \\ 0.60 & 0.55 < B_F \le 0.55 \\ 0.55 & 0.4 < B_F \le 0.55 \\ 0.55 & 0.3 < B_F \le 0.4 \\ 0.4 & 0.2 < B_F \le 0.3 \\ 0.4 & 0.1 < B_F \le 0.2 \\ 0.4 & B_F \le 0.1 \end{cases}$$

Portland, Oregon 97204 Telephone: 503/226-7391 Our Ref. No. 3382-61340

For: QUALITY AND RATE CONTROL STRATEGY FOR DIGITAL AUDIO Express Mail No. EL828140985US

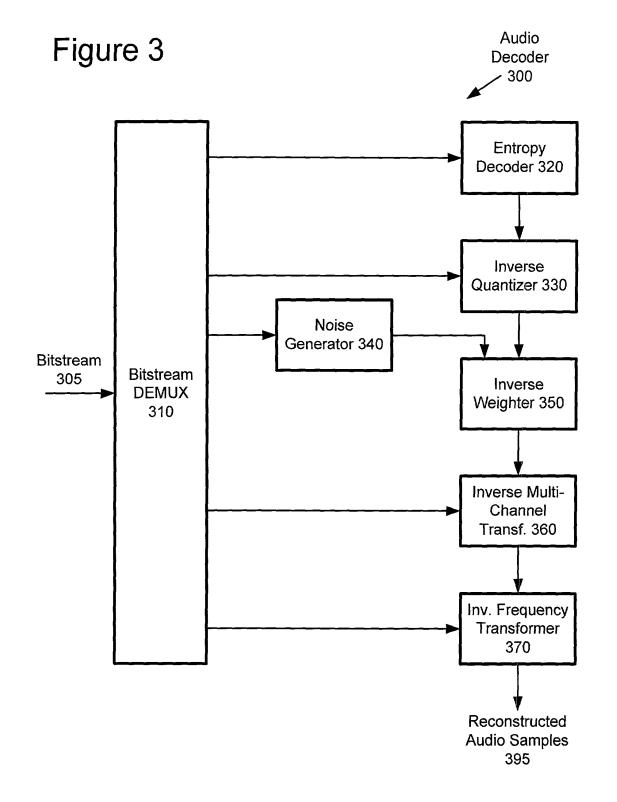
Mailed: December 14, 2001



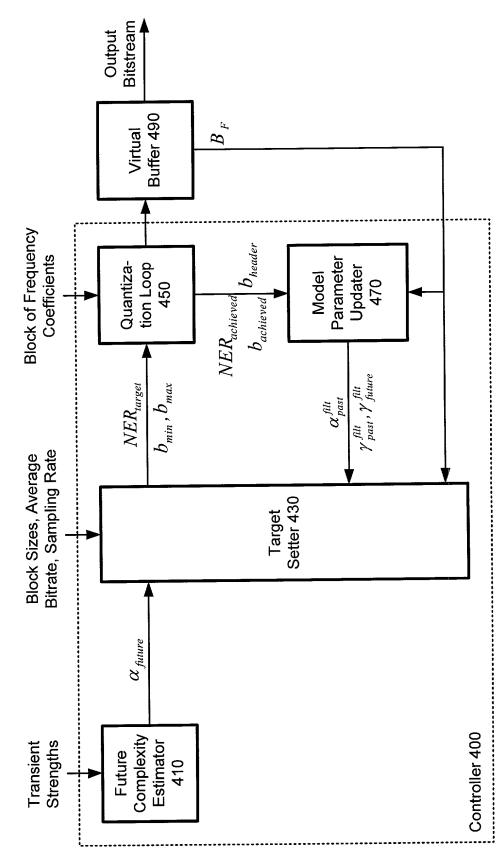
Kyle B. Rinehart Klarquist Sparkman et al 121 SW Salmon Street Suite 1600 Portland, Oregon 97204

Our Ref. No. 3382-61340 For: QUALITY AND RATE CONTROL STRATEGY FOR DIGITAL AUDIO Express Mail No. EL828140985US





## Figure 4



Out Ref. No. 3382-61340 Fot: QUALITY AND RATE CONTROL STRATEGY FOR DIGITAL AUDIO Express Mail No. El828140985US Mailed: December 14, 2001 Kyle B. Rinchart Klarquist Sparkman et al 121 SW Salmon Street Suite 1600 Portland, Oregon 97204 Telephone: 503/226-7391

## Figure 5a

$$(10 B_F \le 0.1)$$

$$(8 0.1 < B_F \le 0.2)$$

$$(6 0.2 < B_F \le 0.3)$$

$$(6 0.3 < B_F \le 0.7 & & N_c \ne N_{Max}$$

$$(7.2 < B_F \le 0.7 & & N_c \ne N_{Max}$$

$$(7.25 0.7 < B_F & & N_c \ne N_{Max}$$

## Figure 6

$$f_{2}(B_{F}, B_{FSP}, N_{c}, N_{Max}) = \begin{cases} 0.35 & B_{F} \le 0.65 \& \&2 \cdot N_{c} \ge N_{Max} \\ 0.25 & 0.65 < B_{F} \& \&2 \cdot N_{c} \ge N_{Max} \\ 0.55 & B_{F} \le 0.65 \& \&8 \cdot N_{c} \ge N_{Max} \\ 0.45 & 0.65 < B_{F} \& \&8 \cdot N_{c} \ge N_{Max} \\ 0.85 & B_{F} \le 0.65 \& \&16 \cdot N_{c} \ge N_{Max} \\ 0.65 & 0.65 < B_{F} \& \&16 \cdot N_{c} \ge N_{Max} \end{cases}$$

# Figure 5b

Our Ref. No. 3382-61340 For: QUALITY AND RATE CONTROL STRATEGY FOR DIGITAL AUDIO Express Mail No. EL828140985US Mailed: December 14, 2001 Kyle B. Rinchart Klarquist Sparkman et al 121 SW Salmon Street Suite 1600 Portland, Oregon 97204 Telephone: 503/226-7391 Kyle B. Rinehart Klarquist Sparkman et al 121 SW Salmon Street **Suite 1600** Portland, Oregon 97204

Telephone: 503/226-7391

Our Ref. No. 3382-61340 For: QUALITY AND RATE CONTROL STRATEGY FOR DIGITAL AUDIO Express Mail No. EL828140985US

Mailed: December 14, 2001

## Figure 8a

## 10 $0.9 < B_F \le 0.95$ 15 $0.85 < B_F \le 0.9$ 25 $0.8 < B_F \le 0.85$ 30 $0.75 < B_F \le 0.8$ 40 $0.7 < B_F \le 0.75$ $50 \quad 0.65 < B_F \le 0.7$ $f_4(B_F, B_{FSP}) = \begin{cases} 60 & 0.6 < B_F \le 0.65 \end{cases}$ 60 $0.55 < B_F \le 0.6$ 60 $0.5 < B_F \le 0.55$ 30 $0.4 < B_F \le 0.5$ 30 $0.3 < B_F \le 0.4$ 18 $0.2 < B_F \le 0.3$ 18 $0.1 < B_F \le 0.2$ $|18 \quad B_F \leq 0.1$

## Figure 8b

$$\begin{cases} 6 & 0.95 < B_F \\ 6 & 0.9 < B_F \le 0.95 \\ 15 & 0.85 < B_F \le 0.9 \\ 15 & 0.8 < B_F \le 0.85 \\ 30 & 0.75 < B_F \le 0.8 \\ 30 & 0.7 < B_F \le 0.75 \\ 30 & 0.65 < B_F \le 0.75 \\ 40 & 0.65 < B_F \le 0.65 \\ 40 & 0.55 < B_F \le 0.65 \\ 20 & 0.5 < B_F \le 0.55 \\ 20 & 0.4 < B_F \le 0.5 \\ 20 & 0.3 < B_F \le 0.4 \\ 18 & 0.2 < B_F \le 0.3 \\ 18 & 0.1 < B_F \le 0.2 \\ 18 & B_F \le 0.1 \end{cases}$$

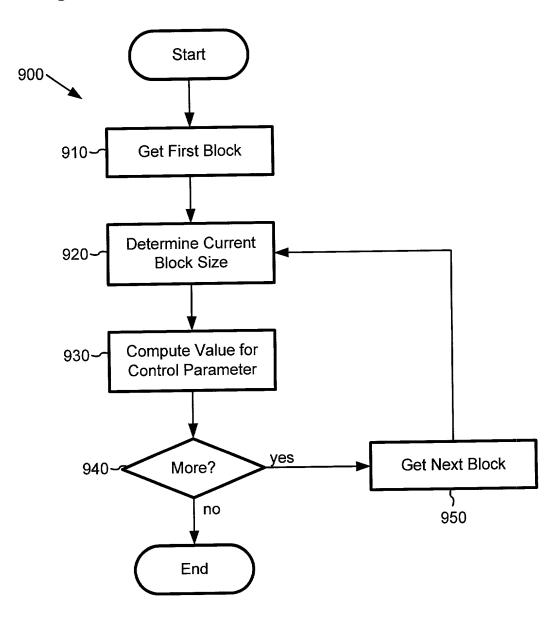
bias\_correction= 
$$max((0.75 \cdot b_{Header}), (0.0625 \cdot b_{Achieved}))$$

$$f_{5}(...) = \begin{cases} -bias\_correction & ((B_{FSP} \le 0.5) \& \&(B_{F} < 0.4)) || ((B_{FSP} > 0.5) \& \&(B_{F} < 0.55)) \\ bias\_correction & ((B_{FSP} \le 0.5) \& \&(B_{F} > 0.6)) || ((B_{FSP} > 0.5) \& \&(B_{F} > 0.75)) \\ 0 & otherwise \end{cases}$$

Portland, Oregon 97204 Telephone: 503/226-7391 Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US

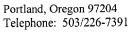
Mailed: December 14, 2001

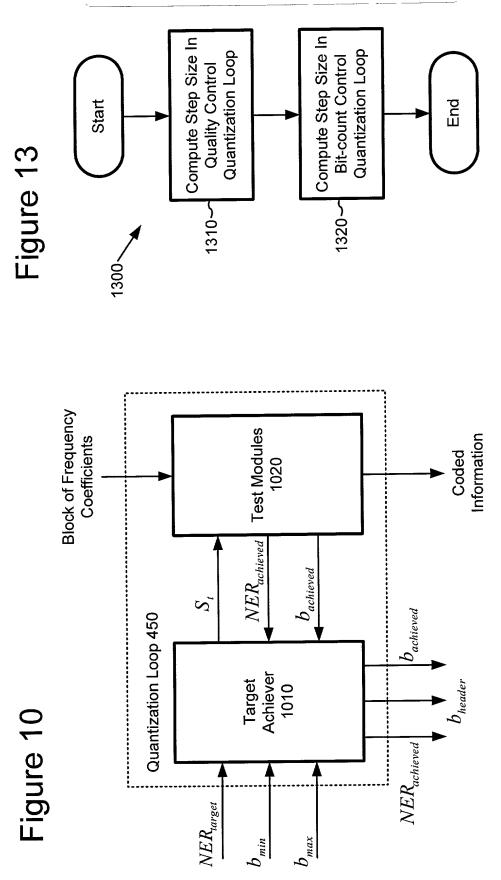




Kyle B. Rinehart Klarquist Sparkman et al 121 SW Salmon Street Suite 1600 Portland, Oregon 97204 Telephone: 503/226-7391

Our Ref. No. 3382-61340 For: QUALITY AND RATE CONTROL STRATEGY FOR DIGITAL AUDIO Express Mail No. EL828140985US Mailed: December 14, 2001





Portland, Oregon 97204 Telephone: 503/226-7391 Our Ref. No. 3382-61340 For: QUALITY AND RATE CONTROL STRATEGY FOR DIGITAL AUDIO Express Mail No. EL828140985US

Mailed: December 14, 2001

Figure 11

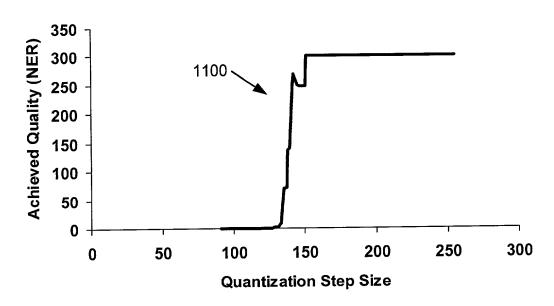
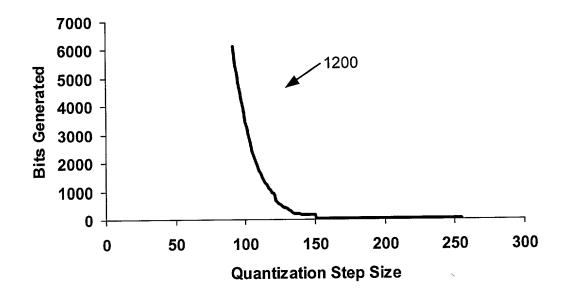
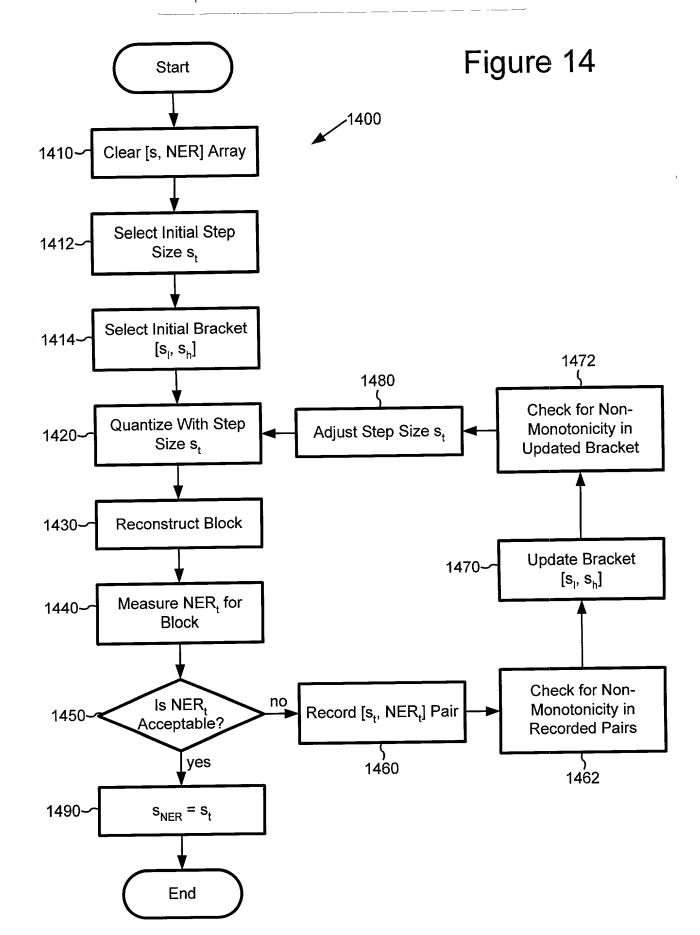


Figure 12



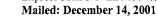
Portland, Oregon 97204 Telephone: 503/226-7391 Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US

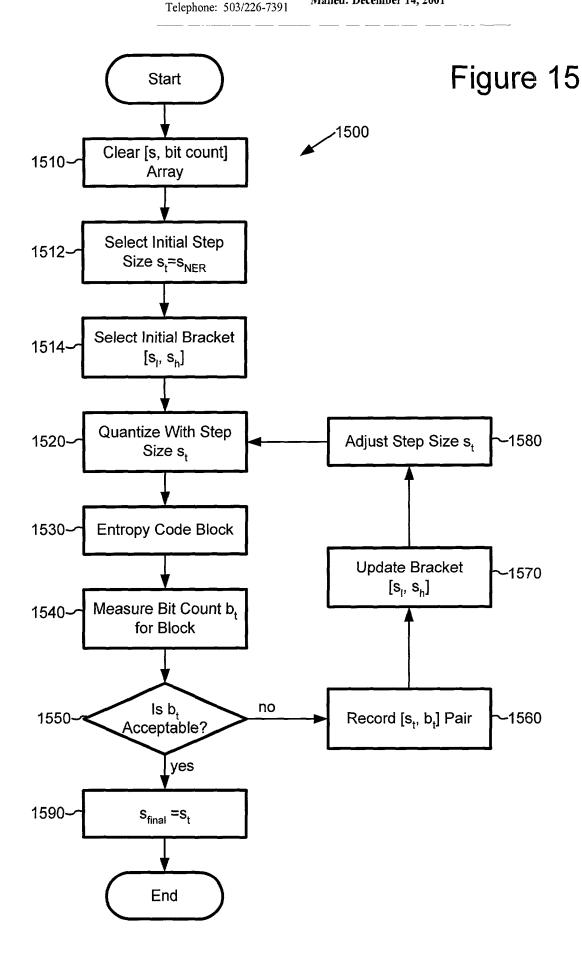
Mailed: December 14, 2001



Kyle B. Rinehart Klarquist Sparkman et al 121 SW Salmon Street Suite 1600 Portland, Oregon 97204

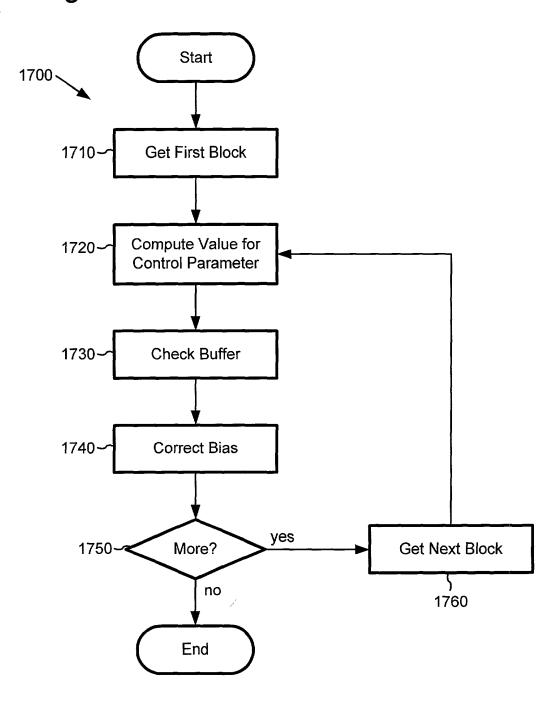
Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US
Mailed December 14, 2001





Portland, Oregon 97204 Telephone: 503/226-7391 Our Ref. No. 3382-61340 For: QUALITY AND RATE CONTROL STRATEGY FOR DIGITAL AUDIO Express Mail No. EL828140985US

Mailed: December 14, 2001



Portland, Oregon 97204 Telephone: 503/226-7391 Our Ref. No. 3382-61340
For: QUALITY AND RATE CONTROL
STRATEGY FOR DIGITAL AUDIO
Express Mail No. EL828140985US

Mailed: December 14, 2001

